

R R Angerstein's  
Illustrated Travel Diary  
1753–1755

Industry in England and Wales  
from a Swedish perspective

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*with an introduction by  
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the way it is worked contribute to making the wire good and serviceable.

### *Iron-sheet rolling and timing at Wortley*

The tinplate works is located 1 mile from the forges and 2 miles from the wire mill.

It consisted of a rolling mill with its reheating furnaces, a workshop for annealing and removing of scale, a workshop for pickling and scouring and another one with three pots for tinning, polishing and removal of the thick tin on the lower edge. In the rolling mill there were two separate stands of rolls with their reheating furnaces. The first stand rolled sheets for tinning and was provided with rolls 12 inches long and 11 inches in diameter and was otherwise designed in the same way as the mills at Pontypool from where the art of making tinplate was stolen. The reheating furnace was of the same size as the ones described at this place, but designed as a reverberatory furnace and fired with pitcoal, which was also the case at one of the rolling-mills in Pontypool.

Double sheets rolled here are 16½ inches long and 12½ inches wide, English measurement, and 100 sheets go into each box. Single sheets are 13½ inches long and 10½ inches wide, and packed 225 to a box. Eight of these sheets are rolled from one piece of iron, 4 inches wide, 10½ inches long and ½ inch thick or 16 of the thinnest, that are used in Manchester for making tags for shoelaces. Although they are paper-thin these sheets are sold at the same price as the double sheets and a box holds 100.

The second stand of rolls is designed to roll larger, black sheets, and the rolls are 30 inches long and have a diameter of 12 inches, with other parts of the stand in proportion.

The furnace for this stand of rolls was larger inside than the one previously mentioned and was fired with pit-coal that was thrown into it. The largest sheets that could be rolled were 28 inches wide and 5 feet to 10 feet long. The sheet-bars, which were forged quite wide and thick, were first rolled broadside-on to 28 inches in length, then rolled lengthwise in further heats. When the sheet reached 5 feet in length it had to be doubled because the furnace did not hold greater lengths and also because of the difficulty of handling long sheets and their rapid cooling when thin and single.

Besides these stands of rolls, there were two additional ones used for the turning of rolls and

for flattening the sheets, by cold rolling after annealing and removal of the cinder or scale by rubbing. At the roll-turning machine it was observed that a long but defective roll was made into a shorter [but sound] one by turning a new neck where a blow-hole had been found in the surface. In order to facilitate the turning of the necks, the posts of roll-housings were longer than usual.

A new method had been invented here to remove the cinder that forms on the surface during rolling and annealing. This consisted of removing the sheets from the furnace with tongs as soon as they had become red-hot and throwing them into a water-trough hewn out of sandstone, plentiful in this neighbourhood. In the trough there was a grid of iron that could be raised by a winch, thus removing all the sheets from the hot water in one operation. In spite of this invention the sheets had to be scrutinised very carefully in order to ensure that all cinder or scale was removed that might prevent the functioning of the pickling process and consequently also the tinning itself. When this has been carried out properly the plates are rolled flat in the mill already mentioned and are subsequently taken to the pickling room, which is built above the furnaces, in order to heat the pickle made up of wheat-bran and water and give it acidity. Then follows the scouring after which the plates are submerged in water to prevent rusting, whilst they are waiting to be placed in the tin-pot. When I asked if the water in which the plates were protected from corrosion had not been mixed with some other substance, the answer was no. Just the same, it appears probable that some lime had been added as this material is known to be corrosive.<sup>68</sup>

During tinning, tallow, whale-oil and resin are used, mixed together. The plates are first boiled in one cell and then dipped consecutively into a second and a third pot, which gives the tin more lustre. Afterwards the plates are scoured with wheat-bran and the tin on the lower edge melted off in a trough.

The single plates, whether thick or thin, are packed 225 to a box, that sells for 53s.6d, of the double 100 are packed in a box selling at the same price.

On the way back we passed the stream that drives these mills and it had a footbridge built across it consisting of single upright stones as shown by drawing no. 205. The dam in the river

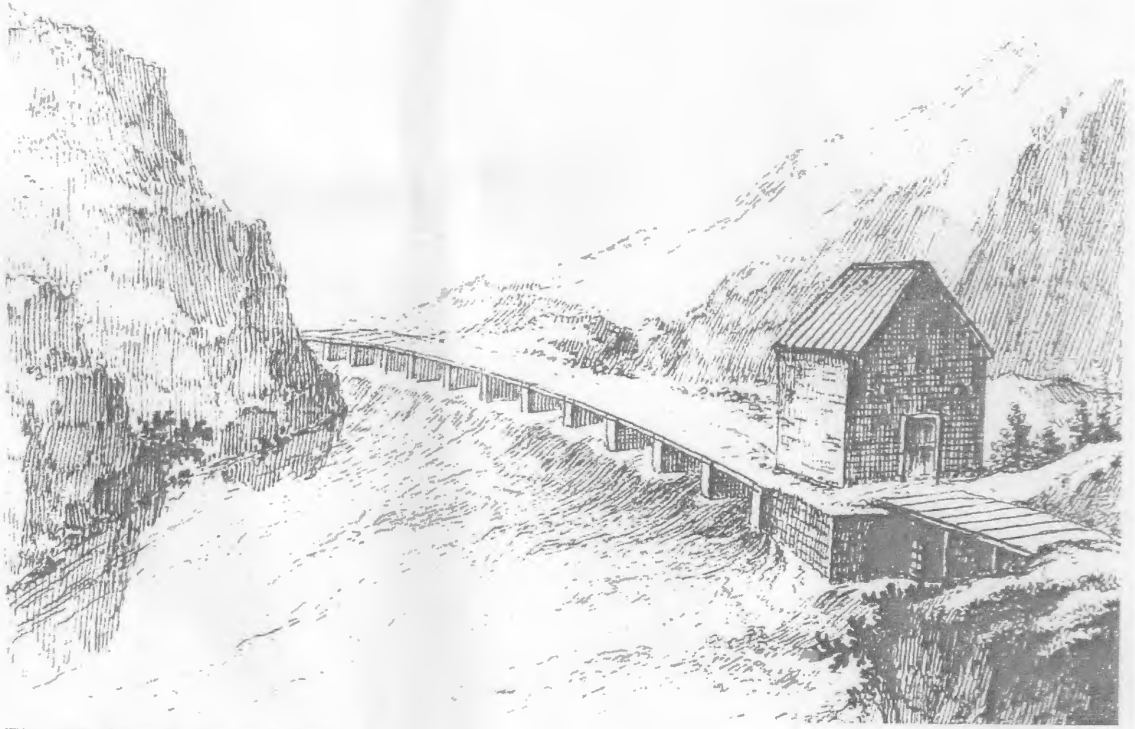


Fig. 205 Stone bridge and dam

was made of slabs of stone on edge so that the water can run freely between them and over them when there is a flood, which strengthens the dam rather than the opposite.

#### *Coal seams*

- 97 There are coal seams in many places around here, of which the top ones generally contain so much fine charcoal powder that the coal is either thrown away as being of no use or left as a roof above the workings.

#### *Bullfighting and other amusements*

At the end of the park that surrounds Lord Strafford's house, baiting of bulls by dogs and sack races had been arranged for the amusement of the gentry, and I saw these as I went past.

In Barnsley, preparations were being made for a yearly festival, that was going to be held two days later and the actors had already arrived and the same evening were going to perform the tragedy *Romeo and Juliet* in a small barn. Posters were up advertising a concert by a blind violinist and the comedy [sic] was to be performed for nothing because theatre performances for payment are not permitted in the provinces.

[Fig. 206 missing, no reference in text]

#### *The nature of the country*

The distance from Barnsley to Leeds is considered to be 14 miles, which equals 20 English.<sup>69</sup> The soil between the two towns is mostly sandy, due to a sandy type of rock with impressions of vegetable matter, already described on the journey to Barnsley. This was also seen in some stone-quarries encountered during the trip to Leeds.

#### *The town of Wakefield and its woollen manufactures*

Wakefield is an attractive and populous town that has factories for woollen cloth and other woollen manufactures and a navigable river to Hull, called the Calder, which makes commerce so much easier. Rhenish millstones, quarried in the vicinity of Coblenz, are used here in the flourmills that are located beside the stone quarry.

#### *Oat bread*

Between Wakefield and Leeds it is 6 of the long miles,<sup>70</sup> and along this road it was noticed at a flourmill that the people were busy drying and